REMARKS

Reconsideration of this application is respectfully requested.

The Examiner's attention is drawn to the attached substitute ABSTRACT OF THE DISCLOSURE on a separate sheet for use in lieu of the originally filed PCT Abstract.

In response to the Examiner's objections to the format of the specification, the format of the entire application (specification and claims and Abstract) have been extensively revised so as to bring them into better compliance with standard US practice.

In response to the Examiner's suggestion, a proposed minor amendment to the labeling of box 4 on Figure 1 is shown in red on the attached photocopy of that Figure together with a separate letter to the Chief Draftsperson. Other requested minor requested amendments to Figures 1 and 2a are also shown in red. Subject to the Examiner's approval and a Notice of Allowance, suitably corrected substitute formal drawings will be timely filed.

The objection to the drawings under 37 C.F.R. §1.83(a) and the apparently related rejection of all claims 1-33 under 35 U.S.C. §112, first paragraph, are both respectfully traversed.

It is respectfully submitted that the drawings are already in compliance with 37 C.F.R. §1.83(a) in that they already depict, in at least some level of detail, virtually every feature of the invention specified in the claims. In the few instances where this is any doubt, the attached requested drawing changes should suffice.

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For example, the database directory 9 in Figure 1 contains the usual records comprising "connected" data fields (e.g., records which each associate a particular name with a particular road and a particular town, etc. as in a typical conventional telephone directory). Although, the box 9 as originally labeled "directory database" is believed to be sufficient to comply with the minimal drawing depiction requirements of 37 C.F.R. §1.83(a), a more express statement of what those in the art would already understand to be conventionally included in the directory database 9 has now been added to Figure 1 so as to avoid any possible issue. The "connection" referred to is, of course, the connected or inter-related way in which the inter-related fields of data in each record of the database are stored. Such "connections" are well understood in the art and it is not believed necessary to further describe or depict such "connections" in order to comply with Rule 83a (which explicitly permits conventional features to be illustrated in the form of graphical drawing symbols or labeled representations such as a rectangular box or the like).

In summarizing his objections, the Examiner alleges that Figure 1 is the only drawing in the application depicting apparatus. However, this is simply not the case. While Figure 1 depicts a schematic high level architecture of an exemplary directory inquiry system, those skilled in the art will surely recognize that this comprises a number of interconnected computer-implemented devices which are each "software" driven. The flow charts of Figures 2-4 illustrating the operation of the various computer sub-systems in Figure 1 describe relevant computer programs for these sub-systems -- and this would be understood as such by those having skill in the relevant art. Such computer programs are embodied structurally as physical states in a program memory store (or portion of a program store) associated with each CPU of

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the system or sub-system. Thus, the schematic depiction of operations provided by the flow charts actually <u>also</u> describe physical structure that constitutes part of the apparatus of the system otherwise depicted at a higher schematic level in Figure 1.

It appears that the Examiner's questions and concerns under Rule 83 and/or under 35 U.S.C. §112(1) all relate to the mis-apprehension that Figures 2-4 do <u>not</u> describe "structural" components of the system schematically depicted in Figure 1. In fact, once it is recognized that the various computer programs embodied within the system of Figure 1 are in fact what is being structurally depicted in Figures 2-4, the Examiner's concerns are obviated. For example, the Examiner's allegedly quoted claim language in the long list bridging pages 2 and 3 of the Office Action are individually set forth below with a brief explanatory comment, it being understood that these proffered explanations or comment are merely exemplary and not exhaustive):

A: <u>"A connection of words of one set to words of another set"</u>

This does not appear to be an actual quote from any particular claim but, instead, the Examiner's own paraphrasing. In any event, as noted above, inter-connections between words in the directory database 9 is now explicitly depicted in the requested amendment for Figure 1.

B. <u>"Control means connecting words of one set to words of another set"</u>

This quotation cannot be found by the undersigned in the claims at issue. Furthermore, if it is intended to be a paraphrase, it is inaccurate.

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C. "A measure obtained for measuring a relevant word"

This quotation cannot be found in the applicant's existing claims. Furthermore, if it is intended to be a paraphrase, it is inaccurate. In any event, the measure of similarity typically provided by speech recognition processes (e.g., step 13 in Figure 3a) is expressly depicted in Figure 3a as being processed by the decision block 48 where the level of confidence in the recognition output is tested.

D. An apparatus arranged to perform additional recognition processes"

Although this is not a completely identical quotation of the language in claim 9, presumably the Examiner has reference to the preamble of claim 9 or the like. With respect to such additional recognition processes, the Examiner is referred to the depiction already in Figure 3a where input speech is stored at block 37 and then, depending upon the decision at block 48, the previously stored speech may be re-recognized at block 53.

E. A means to recognize a failure condition"

Again, reference may be made to block 48 in Figure 3a where failure is detected as a no confidence output whereupon the additional recognition processes therein further depicted are practiced in the exemplary embodiment.

F. "Means to initiate recognition processes in the event of a failure"

The Examiner is referred, for example, to block 49 in Figure 3a wherein a message is played to initiate recognition processes in the event of a failure.

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G. "Telephone line connection"

See block 2 and the input/output depiction at the right hand side of that box in Figure 1

for an explicit telephone line connection depiction in the drawings.

H. "Means responsive to telephone line connection of signals"

Once again, this is either incomplete or an inaccurate paraphrase of the claim language.

In any event, the CLI detector 20 shown in Figure 1 is among the apparatus that responds to

incoming telephone line signals.

I. "Signals indicating origin or destination of calls"

The well known CLI signals clearly indicate the origin of calls. Outgoing dialed numbers

would represent the destination. Both signals would pass through the line interface 2 and the

incoming CLI signals are expressly depicted insofar as the CLI detector 20 is expressly noted in

Figure 1, for example. Processing of CLI or destination indicating signals is also indicated

elsewhere in the drawings.

J. "Entries defined as connected"

The claims have been slightly amended so as to delete the "defined as" language that may

have been somewhat confusing in the original claim language. Insofar as connected entries in

the database 9 are concerned, those are also clearly already depicted in the drawings -- at least so

as to satisfy the minimal depiction requirements of Rule 83a.

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K. "Speaker verification means"

Once again, this does not appear to be an exact quotation from the claim language and/or it is an inaccurate paraphrase. In any event, the speech recognizer 5 and control unit 4 in Figure 1 are among the apparatus used for determining or verifying the identity of the speaker of spoken words, etc. as set forth in claim 15 (if that is what the Examiner intended to reference).

L. "Stored sets of recognition data in different languages and regional accents"

Amendment has been requested to Figure 1 so as to explicitly show that the recognition data for towns, roads and names may be stored in sets.

M. "Stored sets of recognition data for different types of telephone apparatus"

See above for item L.

N. "Means to list all patterns of a second recognition data set related to identified patterns of the first set"

Although this is an incomplete and/or inaccurate paraphrase, it presumably relates to claim 21. The Examiner is respectfully referred to the already depicted control unit 4 in Figure 1 as the claimed "means to generate a list...".

O. "A means of meeting a predetermined criterion for speech signal identification"

This apparently is also an incomplete or inaccurate paraphrase of some claim language. Nevertheless, the Examiner is referred to the control unit 4 already depicted in Figure 1 for an explicit showing in the drawings under Rule 83 for determining whether or not the output of a

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speech recognition process meets a predetermined criterion (e.g., see also decision block such as block 48 in Figure 3a).

P. "Receiving a second signal"

The receipt of a second signal is already explicitly depicted in the drawings. See, for example, block 17 in Figure 2, block 42 in Figure 2a, etc.

Q. "Compiling a list of words as a function of the second signal"

This also is already explicitly depicted in the drawings. See, for example, the compile name list block 20 in Figure 2, the compile road list block 15 in Figure 2a, etc.

R. "Recognize a signal as a letter or sequence of letters"

This also is already explicitly depicted in the drawings. See, for example, the request for spelling in the middle of Figure 3a at block 49 and the recognition of such spellings in block 51 of Figure 3a.

S. "Recognize tones generated by a keypad"

A minor amendment to Figure 2a has been requested so as to make it clear that the alphabetic symbols may be provided by tone inputs as well as speech.

T. "Recognize signals indicating origin or destination of calls"

This is already explicitly depicted in the drawings. See, for example, the blocks 20, 21 in Figure 1 and the blocks 10a, 12a, 12b in Figure 3 or 3a, etc.

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U. "Perform recognition of speech signal or some other type of signal"

With the amendment to Figure 2a recognizing that either speech or tones may be

provided in response to a request to spell an input word, block 43 now also inherently represents

performing recognition of speech signal or some other type of signal.

V. "Retrieve stored speech signal in the event of a recognition failure"

This is already depicted in the drawings. See, for example, the speech stored block 37 in

Figure 3a followed by the re-recognized spoken town in block 53 of Figure 3a (which is, of

course, implemented by retrieving the previously stored speech signal at 37 in the event that the

confidence of speech recognition as tested in block 48 falls below a predetermined threshold --

i.e., failure).

The Examiner has also questioned the symbolic showing in the Figures of processes

which at least partially overlap in the time domain by merely showing parallel-connected blocks.

For example, in Figure 2, while the speech synthesizer is playing the message "which road?" at

block 14, the control unit 4 is busy compiling a road list and updating a road store at blocks 15

and 16 so as to be ready to operate the speech recognizer 5 in block 17 when the customer

answers the played message. Thus, the Figures are believed to properly depict parallel

operations which simultaneously take place in the time domain. These are not alternative input

paths but, rather, simultaneous operation paths within the context of the entire voice inter-active

system of Figure 1.

The Examiner's question about town recognition data being output from block 6 "without having performed the speech recognition and control means of external utterances directly sent to speech recognizer 5 from line interface 2" appears to be directed to some mis-understanding of the system operation. The speech recognizer 5 <u>uses</u> a set or sub-set of the town recognition data from store 6 during the speech recognition process. It would not make sense to require some <u>prior</u> output from the speech recognizer 5 -- as the Examiner's comments seem to imply. As already clearly explained in the specification, the input from the CLI detector 20 via the pattern store 21 operates to select a sub-set of the town recognition data (e.g., associated with the region of the originating call in this particular exemplary embodiment. Those having ordinary skill in the art will recognize, of course, that not all data buses, address buses, control lines, power lines, and the like are in any way depicted in Figure 1 for this complex system of inter-related computer-implemented sub-systems. However, those having skill in the art will clearly be enabled to practice the invention and know that the control unit 4 could, if desired, be used to suppress operation of the CLI detector 20 and pattern store 21 if one does not desire to operate with a sub-set of the town recognition data. An explicit such control line is now proposed for addition to Figure 1.

The Examiner's questions regarding the description at page 9, last paragraph and the CLI detector 20 when read in context clearly refer to block 20 in Figure 2 -- not block 20 in Figure 1.

The Examiner's objection to a lack of depiction of "decision processes required for branching or accepting a signal from two or multiple inputs" with respect to various items of Figures 1, 2, 3, 3a and 4 are not understood. For example, clearly the speech synthesizer 1

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requires text or phonetic inputs. These are shown to be available to the speech synthesizer 1

from both the message data store 3 or the directory database 9. Furthermore, the speech

synthesizer 1 must be controlled so as to select one of the available inputs and this control line is

explicitly shown as coming from the control unit 4. Finally, the speech synthesizer 1 provides

synthesized speech output to the line interface 2 (which is a conventional hybrid circuit, as

explicitly depicted in the Figure, converting an input/output two-wire PSTN circuit into separate

local two-wire input and two-wire output circuits -- one associated with incoming speech signals

and the other associated with outgoing speech signals). At the relevant high level schematic

showing of Figure 1, how could there be any more explicit depiction of what is required for the

depicted processes -- whether they be described as "decision" processes or "branching or

accepting" processes or the like?

Finally, the Examiner's objection to allegedly missing "branches of the data flow path" on

various items in Figures 2, 2a, 3, 3a and 4 are also not understood. For example, with respect to

block 12 of Figure 2, this block simply signifies that speech has been received by the recognizer.

Similarly, block 17, at a subsequent point in time, also represents speech received by the

recognizer (indeed, this is the "second" speech input already mentioned above as having been

properly depicted in the drawings). Still further down in Figure 2, at a yet subsequent time, there

is block 22 representing yet a third speech signal having been received by the recognizer. Since

these successive speech signals are all received and processed in sequence by the same apparatus,

there are no required "branches of the data flow path" missing from the drawing depictions.

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The Examiner's rejections based on the first paragraph of 35 U.S.C. §112 appear to be based on essentially the same formality-based concerns already addressed with respect to Rule 83 and the depiction of the applicant's invention in the drawings. Nevertheless, an attempt will be made to more specifically reply to these separate formality-based grounds of rejection as well. In so doing, special emphasis will be given to the applicant's invention as described and claimed with respect to claims 1-10 and 28.

The Examiner's run-together lists on pages 2-3, and 7-8 of the office action are quite confusing because many of the allegedly essential features simply are not and/or do not exist. Nevertheless an attempt has been made to understand the point the Examiner apparently is trying to make in each case and to then show either where the structural feature has an enabling disclosure.

A. "Compiling lists after receiving a first and second speech signal"

This feature is clearly described on page 9, lines 10-20 and is carried out by the control unit 4 (page 9, line 16).

B. "A connection of words of one set of words to words of another set", "control means connecting words of one set to words of another set", "relating patterns of the second set to patterns of the first, defining entries and connecting entries"

These elements are described on page 7, lines 7-19 and page 8, lines 9-12. It is quite clear from this that the directory database 9 is the store of data containing entries, and

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information defining connections for each entry to words of a first set and a second set. There is

no such "control means".

C. <u>"Controlling speech recognizer access to recognition data"</u>

this is described on page 7, line 30 to page 8, line 2, the control is carried out by the

control unit 4 (page 8, line 33) for access to the recognition data stores (the surname recognition

data store 8 is given as an example - page 7, line 30).

D. <u>A measure obtained for measuring a relevant word", and "weighting similarity of</u>

<u>identified entries"</u>

Presumably the Examiner is referring to features of claims 2 and 3. Weighting is

described on page 17, lines 8 to 11. The measure is produced by the recognizer (page 16, lines 2-

3) and it would be clear to a person skilled in the art that as the road list is compiled by the

control unit 4 (page 9, lines 16-21) then step 15 (page 16, line 21) is carried out by the controller

4.

E. <u>"Compiling lists of identified speech signals connected to entries in other data stores"</u>

See A just above.

F. <u>"An apparatus arranged to perform an additional recognition process", "a means to</u>

<u>recognize a failure condition", "means to initiate recognition process in the event of a</u>

<u>failure"</u>

The additional recognition process is described on page 17, lines 30-33 as reprocessing

using the steps set out in Figure 2. Therefore, it is quite clear from the description of Figure 2

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that the apparatus arranged to perform an additional recognition process is the recognizer 2. A failure condition is recognized as described on page 17, lines 17-21. A person skilled in the art would understand that the means to recognize a failure condition and the means to initiate the recognition process in the event of a failure are both constituted by the control unit 4.

G. "Counting words defined as connected", "controlling elimination of words from a list"

Anyone skilled in the art would know how to find how many entries in a database meet a particular criteria. Eliminating words from a list is simply part of what a recognizer typically does.

H. "Marking items in a recognition store"

A person skilled in the art surely would have known how to do this at the time the invention was made. For example, the setting is of a one bit field data value to a "1" or "0" flag value is well within the expected ordinary skill.

The rejection of claims 1-33 under 35 U.S.C. §103 as allegedly "obvious" over a combination of Bielby in view of Paeseler is respectfully traversed.

This ground of rejection appears to be based primarily upon the Examiner's informality objections and rejections already discussed above.

In any event, in Bielby the second speech signal is not sent to a recognizer, rather it is stored for transmitting to an operator (line 65) so the only feature of even claim 1 disclosed in Bielby is that described in part (a). Paesler describes a continuous speech recognition system in

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which a list of all allowed words to be recognized is modified each time a possible word end is reached, the list being modified to include all words which could possibly follow that word. The list therefore continually grows until a pruning step as described in column 12, lines 15-54 is applied. Neither of these systems either alone or together disclose or suggest the feature claimed in the claims (e.g., claim 1 or in claim 28).
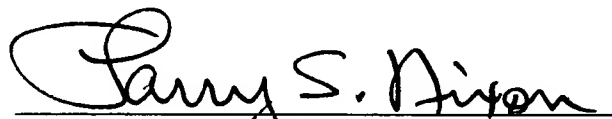
The Examiner's attention is also drawn to new claims 34-37 which have been added in an attempt to more particularly and distinctly point out certain novel features of the applicant's invention in more traditional US claim format.

Accordingly, this entire application is now believed to be in allowable condition and a formal Notice to that effect is respectfully solicited.

Respectfully submitted,

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